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10/532,656	04/26/2005	Harry Vig	011-03US1	6265

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EXAMINER	
SHEPELEV, KONSTANTIN	

ART UNIT	PAPER NUMBER
2131	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/532,656	VIG ET AL.	
	Examiner	Art Unit	
	KONSTANTIN SHEPELEV	2131	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *26 April 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-18* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-18* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *4/26/2005*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

This office action is in response to application filed on April 26, 2005 in which claims 1-18 are presented for examination.

Status of Claims

Claims 1-18 are pending; of which claims 1 and 11-13 are in independent form. Claims 1, 2, 10, 12-15, and 17 are rejected under 35 USC 102(b). Claims 3-9, 11, 16, and 18 are rejected under 35 USC 103(a).

Specification

The following guidelines illustrate the preferred layout for the specification of a utility application. These guidelines are suggested for the applicant's use.

Arrangement of the Specification

As provided in 37 CFR 1.77(b), the specification of a utility application should include the following sections in order. Each of the lettered items should appear in upper case, without underlining or bold type, as a section heading. If no text follows the section heading, the phrase "Not Applicable" should follow the section heading:

(a) TITLE OF THE INVENTION.
(b) CROSS-REFERENCE TO RELATED APPLICATIONS.
(c) STATEMENT REGARDING FEDERALLY SPONSORED RESEARCH OR DEVELOPMENT.
(d) THE NAMES OF THE PARTIES TO A JOINT RESEARCH AGREEMENT.
(e) INCORPORATION-BY-REFERENCE OF MATERIAL SUBMITTED ON A COMPACT DISC.
(f) BACKGROUND OF THE INVENTION.
    (1) Field of the Invention.
    (2) Description of Related Art including information disclosed under 37 CFR 1.97 and 1.98.
(g) BRIEF SUMMARY OF THE INVENTION.
(h) BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWING(S).
(i) DETAILED DESCRIPTION OF THE INVENTION.

(j) CLAIM OR CLAIMS (commencing on a separate sheet).
(k) ABSTRACT OF THE DISCLOSURE (commencing on a separate sheet).
(l) SEQUENCE LISTING (See MPEP § 2424 and 37 CFR 1.821-1.825. A "Sequence Listing" is required on paper if the application discloses a nucleotide or amino acid sequence as defined in 37 CFR 1.821(a) and if the required "Sequence Listing" is not submitted as an electronic document on compact disc).

Content of Specification

(a) Title of the Invention: See 37 CFR 1.72(a) and MPEP § 606. The title of the invention should be placed at the top of the first page of the specification unless the title is provided in an application data sheet. The title of the invention should be brief but technically accurate and descriptive, preferably from two to seven words may not contain more than 500 characters.

(b) Cross-References to Related Applications: See 37 CFR 1.78 and MPEP § 201.11.

(c) Statement Regarding Federally Sponsored Research and Development: See MPEP § 310.

(d) The Names Of The Parties To A Joint Research Agreement: See 37 CFR 1.71(g).

(e) Incorporation-By-Reference Of Material Submitted On a Compact Disc: The specification is required to include an incorporation-by-reference of electronic documents that are to become part of the permanent United States Patent and Trademark Office records in the file of a patent application. See 37 CFR 1.52(e) and MPEP § 608.05. Computer program listings (37 CFR 1.96(c)), "Sequence Listings" (37 CFR 1.821(c)), and tables having more than 50 pages of text were permitted as electronic documents on compact discs beginning on September 8, 2000.

(f) Background of the Invention: See MPEP § 608.01(c). The specification should set forth the Background of the Invention in two parts:

(1) Field of the Invention: A statement of the field of art to which the invention pertains. This statement may include a paraphrasing of the applicable U.S. patent classification definitions of the subject matter of the claimed invention. This item may also be titled "Technical Field."

(2) Description of the Related Art including information disclosed under 37 CFR 1.97 and 37 CFR 1.98: A description of the related art known to the applicant and including, if applicable, references to specific related art and problems involved in the prior art which are solved by the applicant's invention. This item may also be titled "Background Art."

(g) Brief Summary of the Invention: See MPEP § 608.01(d). A brief summary or general statement of the invention as set forth in 37 CFR 1.73. The summary is separate and distinct from the abstract and is directed toward the invention rather than the disclosure as a whole. The summary may point out the advantages of the invention or how it solves problems previously existent in the prior art (and preferably indicated in the Background of the Invention). In chemical cases it should point out in general terms the utility of the invention. If possible, the nature and gist of the invention or the inventive concept should be set forth. Objects of the invention should be treated briefly and only to the extent that they contribute to an understanding of the invention.

(h) Brief Description of the Several Views of the Drawing(s): See MPEP § 608.01(f). A reference to and brief description of the drawing(s) as set forth in 37 CFR 1.74.

(i) Detailed Description of the Invention: See MPEP § 608.01(g). A description of the preferred embodiment(s) of the invention as required in 37 CFR 1.71. The description should be as short and specific as is necessary to describe the invention adequately and accurately. Where elements or groups of elements, compounds, and processes, which are conventional and generally widely known in the field of the invention described and their exact nature or type is not necessary for an understanding and use of the invention by a person skilled in the art, they should not be described in detail. However, where particularly complicated subject matter is involved or where the elements, compounds, or processes may not be commonly or widely known in the field, the specification should refer to another patent or readily available publication which adequately describes the subject matter.

(j) Claim or Claims: See 37 CFR 1.75 and MPEP § 608.01(m). The claim or claims must commence on separate sheet or electronic page (37 CFR 1.52(b)(3)). Where a claim sets forth a plurality of elements or steps, each element or step of the claim should be separated by a line indentation. There may be plural indentations to further segregate subcombinations or related steps. See 37 CFR 1.75 and MPEP § 608.01(i)-(p).

(k) Abstract of the Disclosure: See MPEP § 608.01(f). A brief narrative of the disclosure as a whole in a single paragraph of 150 words or less commencing on a separate sheet following the claims. In an international application which has entered the national stage (37 CFR 1.491(b)), the applicant need not submit an abstract commencing on a separate sheet if an abstract was published with the international application under PCT Article 21. The abstract that appears on the cover page of the pamphlet published by the International Bureau (IB) of the World Intellectual Property Organization (WIPO) is the abstract that will be used by the USPTO. See MPEP § 1893.03(e).

(l) Sequence Listing, See 37 CFR 1.821-1.825 and MPEP §§ 2421-2431. The requirement for a sequence listing applies to all sequences disclosed in a given application, whether the sequences are claimed or not. See MPEP § 2421.02.

9. The disclosure is objected to because of the following informalities:

a. On page 3, line 51, of the current specification applicant uses acronym FPGA for the first time without disclosing the meaning of the acronym.

b. On page 4, line 1, of the current specification applicant uses acronym RNG for the first time without disclosing the meaning of the acronym.

Examiner requests from applicant to disclose the abovementioned acronyms in a similar manner as quantum key distribution (QKD) for the consistency and clarity purposes.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

1. Claims 1, 2, 10, 12-15, and 17 are rejected under 35 U.S.C. 102(b) as being anticipated by Townsend et al. (US 5,675,648).

With respect to claim 1, Townsend teaches the limitation of "establishing in each QKD station respective receive and transmit time domains that are connected between the QKD stations via a timing channel" (column 1, lines 57-60) as a calibration signal is transmitted over the public channel to calibrate the system for the transmission of a key on the quantum channel, where (column 2, lines 19-22) the calibration step preferably includes transmitting a clock from the transmitter to the receiver on the public channel to provide timing information for the subsequent decoding of a key transmitted on the quantum channel.

In addition, Townsend teaches the limitation of "transmitting from the first station to the second station quantum signals emitted by a laser source over a quantum channel connecting the first and second stations" (Abstract) as a key is distributed on a quantum channel.

Further, Townsend teaches the limitation of "transmitting optical synchronization signals over a timing channel connecting the first and second QKD stations from respective optical transmitters and over the timing channel, without interrupting the transmission of the quantum signals" (column 6, line 65 – column 7, line 2) as the different channels can be separated by means of wavelength-dependent fiber couplers and optical fibers. In this case the clock and calibration information can be transmitted continuously during the quantum transmission.

Furthermore, Townsend teaches the limitation of "forming the optical synchronization signal to include frame sync pulses and data pulses" (column 5, lines 50-53) as the transmitter and receiver communicate on public channel to exchange information on which encoding/decoding alphabets were used for giver signal pulses. In addition, (column 5, lines 57-59) as in addition to use for public discussion stage of the protocol, the public channel is also used to calibrate the transmission system.

Finally, Townsend teaches the limitation of "coordinating transmission of the quantum signals, encoding of the quantum signals and detecting of the encoded quantum signals by locking the receive and time domains of the two QKD stations using the optical synchronization signals in order to establish a key between the two QKD stations" (column 6, lines 41-56) as the quantum key distribution system used in the present example has [...] the protocol that requires that transmitter and receiver must correlate the sent and received data for each pulse time-slot. This function can be performed by the calibration process. During this process, the amplified output from the public channel detector is input to the clock regeneration module. This contains an electronic filter that produces an oscillating signal at the pulse repetition frequency which is used to lock a local oscillator to the optical source or master clock frequency. This local oscillator is then used to provide the timing information required by the receiver during the quantum transmission stage of the protocol. Furthermore, (column 6, line 65 – column 7, line 5) as the different channels can be separated by means of wavelength-dependent fiber couplers and optical fibers. In this case the clock and calibration information can be transmitted continuously during the quantum

transmission. This removes the need for a local oscillator in the receiver and thereby removes any instability problems that might be associated with such an oscillator.

With respect to claim 2, Townsend teaches the limitation of "multiplexing the quantum signals and sync signals onto a common transmission medium linking the first and second QKD stations" (column 2, lines 34-39) as a quantum channel and a public channel are transmitted over a common transmission medium, and in that a clock signal is transmitted over the public channel from a transmitter to a receiver to provide timing information for the subsequent decoding of a key transmitted on the quantum channel.

With respect to claim 10, Townsend teaches the limitation of "electronically adjusting the transmitting and receiving domains in each QKD station to compensate for time delays introduced in at least one of the quantum channel and timing channel" (column 6, lines 27-28) as after some characteristic time the system needs to be re-calibrated. Furthermore, (column 6, lines 56-62) each time the transmission system is re-calibrated via the public channel, the local oscillator is re-timed so as to avoid accumulation of any timing errors. The frequency with which re-calibration needs to be carried out is determined by the shorter of the two time constants associated with the stability of the local oscillator and the transmission channel.

With respect to independent claim 12, it is rejected in view of the same reasons stated in the rejection of independent claim 1 and claim 5.

With respect to independent claim 13, it is rejected in view of the same reasons as stated in the rejection of independent claim 1.

With respect to claim 14, Townsend teaches the limitation of "the timing channel and the public channel share a single physical connection between the two QKD stations" (column 2, lines 57-59) as in addition to this public discussion stage, the public channel is also used to calibrate the transmission system, Where (column 2, lines 18-21) calibration step includes transmitting a clock from the transmitter to receiver on the public channel.

With respect to claim 15, Townsend teaches the limitation of "the QKD system operates as a two-way system" (Column 6, lines 29-34) as after the key has been communicated on the quantum channel, the public channel is then used to complete the key distribution protocol. This step requires the use of an additional source at the receiver and an additional detector at the transmitter to enable two way communication.

With respect to claim 17 as dependent on claim 13, it is rejected in view of the same reasons as stated in the rejection of claim 5.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Townsend et al. (US 5,675,648) (648) in view of Townsend et al. (US 5,768,378) (378).

With respect to claim 3, it is noted that Townsend (648) does not explicitly teach the limitations of "generating an electrical sync signal from an FPGA", "receiving the electrical sync signal at an optical transmitter", and "converting the electrical sync signal to the optical sync signal."

On the other hand, Townsend (648) teaches (Fig. 4, item 48, 49, and 50) Modulator Driver coupled to a semiconductor laser and a microprocessor, where (column 4, lines 39-40_ the laser and the modulator driver are controlled by the microprocessor.

In addition, Townsend (378) teaches (Fig. 5a, items 52, 53, and 55) Data + Clock Generator 53 coupled to a semiconductor laser 52 and a microprocessor 53, where (column 7, lines 56-58) semiconductor laser 52 provides a bright multi-photon source which is used for timing and calibration.

It would have been obvious to one of the ordinary skill in the art at the time of the invention to incorporate the Data + Clock Generator taught by Townsend (378) into the

system of Townsend (648) to provide independent robust control unit for modulating data and timing signals.

Furthermore, examiner takes the Official Notice that the use of FPGA to generate synch signal is well known in the art. Therefore, it would have been obvious to one of the ordinary skill in the art at the time of the invention to implement the functionality of Data + Clock Generator using FPGA because of the ease and low cost of design and manufacturing.

4. Claims 4 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Townsend et al. (US 5,675,648) in view of Piasecki et al. (US 5,111,451).

With respect to claim 4, Townsend teaches "sending the sync signals between a first the first QKD station and the second QKD station", "an optical transmitter and an optical transceiver", and "timing channel" (Fig.4, items 1, 2, and 3) optical transmitter and optical receiver coupled via transmission fibre that is used for transmitting quantum channel and public channel.

It is noted, however, that Townsend does not explicitly teach the structure where the abovementioned transmitter and transceiver comprise the parts of the first optical modem in the first QKD station and a second optical modem in the second QKD station, wherein the first and second optical modems each have an optical transmitter and an optical transceiver coupled to a circulator, and wherein the circulators are connected to the timing channel."

On the other hand, Piasecki teaches such optical modem structure (Fig. 2; column 4, 21-22) as a diagram of each of the optical modems.

The examiner takes the Official Notice that the structure of the optical modem is well known in the well known in the art. Therefore, it would have been obvious to one of the ordinary skill in the art at the time of the invention to incorporate transmitter and receiver into the same system to provide the ability for each participant to both transmit and receive data over the optical fibre medium.

With respect to claim 5, Townsend teaches the limitation of "coordinating the operation of the optical transmitters and optical receivers in the first and second modems with first and second phase-lock loops (PLLs) in the first optical modem, and a third PLL and a transmit clock in the second optical modem" (column 6, lines 1-5) as a polarization compensator in the receiver in then adjusted via a feedback loop in order to liberalize the output polarization an match it to the preferred polarization axis of the receiver.

5. Claim 6, 7, 11, and 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Townsend et al. (US 5,675,648) in view of Bennett (US 5,307,410).

With respect to claim 6, it is noted that Townsend does not explicitly teach the limitations of "generating random numbers from a random number generation unit having a plurality of data sources that generate data and that are coupled to a data

source selector", "selecting one of the data sources using the data source selector", and "delivering the data from the selected data source to a modulator driver."

On the other hand, Bennett teaches the abovementioned limitations (column 5, lines 14-19) as a random number generator coupled over lead to an input of controller. Random number generator functions to create true random number which may be used by controller to set the phase of the plurality of light pulses passing through phase modulator.

It would have been obvious to one of the ordinary skill in the art at the time of the invention to incorporate teachings of Bennett into the system of Townsend to provide a simple way of managing phase shift of the transmitted light signal providing greater security for data transmission.

With respect to claim 7, Townsend does not explicitly teach the limitations of "providing a gating signal to the modulator driver that coordinates the activation of the modulator driver with the arrival of one of the quantum signals at the modulator based on the synchronization signals" and "encoding the quantum signal with the modulator."

On the other hand, Bennett teaches the abovementioned limitations (column 5, lines 4-19) as the lower intensity light pulse passing forward into the phase modulator. Phase modulator functions to introduce or set the phase of a coherent light pulse from pulsed light source. The phase shift is chosen randomly from a fixed set of possible values. Controller provides a control signal over lead to phase modulator to set the phase of the coherent light pulse passing through phase modulator. Random number

generator is coupled over lead to an input of controller. Random number generator functions to create true random number which may be used by controller to set the phase of the plurality of light pulses passing through phase.

It would have been obvious to one of the ordinary skill in the art at the time of the invention to incorporate teachings of Bennett into the system of Townsend to provide a simple way of managing phase shift of the transmitted light signal providing greater security for data transmission.

With respect to claim 11, Townsend teaches the limitation of "a quantum transceiver coupled to a quantum channel, the quantum transceiver having a modulator driver and a modulator, and adapted to transmit and/or receive quantum signals over the quantum channel" and "an optical modem adapted to send and receive optical synchronization signals over a timing channel, the optical modem having an optical receiver and an optical transmitter both coupled to a circulator, which is coupled to the timing channel" (Fig. 4, items 49, 41).

It is noted, however, that Townsend does not explicitly teach the limitations of "a random number generator (RNG) unit coupled to the quantum transceivers, the RNG unit adapted to provide random numbers to the quantum transceiver so as to randomly encode a quantum signal passing through the modulator", "a public data transceiver (PDT) coupled to the RNG unit, the quantum transceiver and to a public channel", and "a controller coupled to optics layer, the RNG unit and the optical modem, wherein the controller in one QKD station is adapted to synchronize the operation of the quantum

transceiver and the RNG unit in the one station to the quantum transceiver and RNG unit of the other QKD station based on synchronization signals communicated between the controllers through respective optical modems via the timing channel without interrupting the transmitting and/or receiving of quantum signals over the quantum channel"

On the other hand, Bennett teaches the abovementioned limitations (Fig. 2, items 36, 46, 18, 20, 40).

It would have been obvious to one of the ordinary skill in the art at the time of the invention to incorporate teachings of Bennett into the system of Townsend to provide a simple way of managing phase shift of the transmitted light signal providing greater security for data transmission.

With respect to claim 18, it is noted that Townsend does not explicitly teach the limitation of "synchronization of the QKD stations is controlled by the controller of either QKD station."

On the other hand, Bennett teaches the abovementioned limitation (Fig. 2; column 4, lines 55-57) as controller provides a control signal over lead to pulsed light source. In addition, (column 4, lines 44-48) Message channel 22 functions to convey information from the sender to an intended receiver and from the receiver to the intended sender in plain text as well as encrypted text after a key has been agreed upon or distributed between the two.

It would have been obvious to one of the ordinary skill in the art at the time of the invention to incorporate teachings of Bennett into the system of Townsend to reduce the complicity of the synchronization process.

6. Claims 8 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Townsend et al. (US 5,675,648) in view of Gisin et al. (US 6,438,264 B1).

With respect to claim 8, it is noted that Townsend does not explicitly teach the limitations of "forming from the quantum signal first and second quantum pulses at the first QKD station and transmitting the quantum pulses over the quantum channel to the second QKD station", "at the second QKD station, randomly modulating one of the quantum pulses and attenuating the quantum pulses to form weak quantum pulses", "sending both pulses to back to the first QKD station via the quantum channel", and "randomly modulating the unmodulated pulse at the first QKD station."

On the other hand Gisin teaches the abovementioned limitations (column 3, lines 15-32) as Bob initiates the transmission by sending a short laser pulse toward Alice. The pulse arriving at the coupler is split into two parts. Two pulses travel down the fiber to Alice. In order to encode her bits, Alice lets the first pulse be reflected by the mirror, but modulates the phase of the second pulse. Two pulses then travel back to Bob. Bob lets the second pulse unaltered, but modulates the phase of the first pulse.

It would have been obvious to one of the ordinary skill in the art at the time of the invention to incorporate teachings of Gisin into the system of Townsend to provide a more reliable method for detecting interference.

With respect to claim 9, it is rejected in view of the same reasons as stated in the rejection of claim 8.

7. Claim 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mody et al. (US 2002/0181390 A1).

It is noted that Townsend does not explicitly teach the limitation of "the QKD system operates as a one-way system."

On the other hand, Mody teaches the abovementioned limitation (page 2, paragraph 0026) as the communication system, incorporating either one-way or two-way communication over a range of distances.

The examiner takes the Official Notice that the one-way and two-way communication systems are well known in the art. Therefore it would have been obvious to one of the ordinary skill in the art to implement the QKD system operating over optical communication network as either one-way or two-way system depending on requirements of communication network.

Conclusion

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

a. Mazourenko et al. (US 6,272,224 B1).

b. Bennett et al. (US 5,515,438).

c. Tomita (US 2002/0025041 A1).

d. Bennet et al. "Mixed-state entanglement and quantum error correction." Phys. Rev. A54, 3824-3851, 1996.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to KONSTANTIN SHEPELEV whose telephone number is (571)270-5213. The examiner can normally be reached on Mon - Thu 8:30 - 18:00, Fri 8:30 - 17:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ayaz R. Sheikh can be reached on (571)272-3795. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Konstantin Shepelev/ 8/21/2008
Examiner, Art Unit 2131

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/Ayaz R. Sheikh/
Supervisory Patent Examiner, Art Unit 2131